



**ELECTRONIC MATERIALS**  
CIRCUIT BOARD TECHNOLOGIES

# CIRCUPOSIT™ MLB NEUTRALIZER 216

For PWB Metallization Applications

## DESCRIPTION

As an integral component in the Circuposit 200 MLB Process, Circuposit MLB Neutralizer 216 effectively neutralizes and removes manganese residues, formed at the previous step, from hole-wall surfaces.

## ADVANTAGES

- Fast and effective neutralization
- Specifically formulated so as not to contribute to "pink ring"
- Wide operating parameters
- Contributes to virtual elimination of hole-wall pull away and blow holes
- Free rinsing

## BATH MAKE-UP

Add in order listed and stir well after each addition:

Distilled or deionized water      80% bv

Circuposit MLB Neutralizer 216    20% bv

## BATH OPERATION

Temperature: 110–125°F (43.3–51.6°C)

Time: 5–7 minutes

Agitation: Mild mechanical is recommended; air can be used

Rinsing: Counterflow rinsing is suggested

Ventilation: Recommended

Filtration: Use a 5–10 micron polypropylene cartridge filter as required

## BATH CONTROL AND REPLENISHMENT

The solution is analyzed for % bath strength and normality using the enclosed procedures and replenished according to the replenishment schedules outlined. Bath strength should be maintained between 60–120% and normality in the range of 1.0–1.5N. If correct replenishment is followed, normality will automatically remain in range. However, should it fall, increase to a minimum 1.3N with additions of concentrated sulfuric acid (661 Be). Maintain solution volume with distilled or deionized water.

Replenishment Schedule for a 100 gallon bath

% Bath Strength	Additions of MLB Neutralizer 216
120	—
100	—
80	4 gallons
60	8 gallons

Replenishment Schedule for a 100 liter bath

% Bath Strength	Additions of MLB Neutralizer 216
120	—
100	—
80	4 liters
60	8 liters

## CIRCUPOSIT MLB NEUTRALIZER 216

### Normality Adjustment for a 100 gallon bath

Bath Normality	Concentrated Sulfuric Acid
1.5N	—
1.3N	—
1.1N	0.55 gallons
0.9N	1.10 gallons
0.7N	1.65 gallons

### Normality Adjustment for a 100 liters bath

Bath Normality	Concentrated Sulfuric Acid
1.5N	—
1.3N	—
1.1N	0.55 liters
0.9N	1.10 liters
0.7N	1.65 liters

### YIELD

Approximately 600 square feet of surface area can be processed per gallon of concentrate (14.7 square meters/liter). Best results are achieved when replenishment is made after each 50 square feet per gallon of bath (1.2 square meters/liter) have been processed.

### BATH CONTROL PROCEDURE

#### I. Principle

A sample is treated with excess ferric ions and the ferrous ions produced are titrated with ammonium ceric sulfate using N-phenylanthranilic indicator.\*

#### II. Reagents

- Ammonium ferric sulfate, approximately 15%; to 450 ml of distilled water, add 25 ml of sulfuric acid (S.G. 1.55, approximately 20N) and 75 gm of ammonium ferric sulfate (ferric alum)  $\text{NH}_4\text{Fe}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$ ; stir to dissolve
- Ammonium ceric sulfate (A.C.S.), 0.10N; Phosphoric acid, 10% by volume; dilute 50 ml of orthophosphoric acid (S.G. 1.70, about 85%) to 500 ml with distilled water
- N-phenylanthranilic acid indicator, 0.1%; dissolve 0.5 gm of indicator in 3 ml of 1N NaOH and dilute to 500 ml with distilled water\*

#### III. Procedure

- Pipette 10.0 ml Circuposit MLB Neutralizer 216 bath into a 250 ml Erlenmeyer flask and add 30 ml of ammonium ferric sulfate solution.
- Heat to boiling and boil for five minutes.
- Cool rapidly to room temperature, add 20 ml of phosphoric acid (10%) and a few drops of N-phenylanthranilic acid indicator.\*  
 \*Note: If N-phenylanthranilic acid is unavailable, ferroin indicator may be used.
- Titrate immediately with ammonium ceric sulfate (0.10N) from the pale yellow to purple end point.

#### IV. Calculation

$$\% \text{ Bath strength} = \frac{\text{ml A.C.S.} \times \text{N of A.C.S.} \times 820.7}{\text{aliquot (10 ml)}}$$

### NORMALITY CONTROL PROCEDURE

#### I. Principle

A sample is titrated to a phenolphthalein end point with sodium hydroxide.

#### II. Reagents

- Sodium hydroxide, 1.0N, standardized
- Phenolphthalein indicator, 1% in 95% ethanol

#### III. Procedure

- Pipette 10 ml of Circuposit MLB Neutralizer 216 bath into a 250 ml Erlenmeyer flask and dilute to 100 ml.
- Add 10–15 drops of phenolphthalein indicator and titrate with sodium hydroxide to the first pink end point.

#### IV. Calculation

$$\text{Normality} = \frac{\text{ml NaOH} \times \text{N of NaOH}}{\text{aliquot (10 ml)}}$$

### PRODUCT DATA

#### Circuposit MLB Neutralizer 216

Appearance: Pale-yellow, nonflammable, strongly acidic, aqueous solution

pH: <1.0

Specific Gravity (at 20°C) ~1.20

## CIRCUPOSIT MLB NEUTRALIZER 216

### EQUIPMENT

Tanks: CPVC, polyethylene, polypropylene  
Heaters: Teflon, Teflon-coated coils, or quartz immersion  
Racks: Stainless steel  
Filter media: Polypropylene cartridge, 5–10 micron

### HANDLING PRECAUTIONS

Before using this product, consult the Material Safety Data Sheet for details on product hazards, recommended handling precautions, and product storage.

**CAUTION!** When using immersion heaters, failure to maintain proper volume level can expose tank and solution to excessive heat resulting in a possible combustion hazard, particularly when plastic tanks are used.

### STORAGE

Store Circuposit MLB Neutralizer 216 only in upright, original containers in a dry area at 50–90°F (10–32°C).

### WASTE TREATMENT

A used bath may be treated according to Rohm and Haas Electronic Materials Waste Treatment Procedure WT 77-2. Contact your Rohm and Haas Electronic Materials Technical Representative for more information. It is your responsibility to verify that this procedure complies with federal, state and local laws and regulations for wastewater discharge.

Due to the nature of Circuposit MLB Neutralizer 216, disposal of it, or residues therefrom, should be made in compliance with federal, state and local environmental laws.

## CIRCUPOSIT MLB NEUTRALIZER 216



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